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If food be set down in considerable quantity before newly hatched chicks, and in a vessel similar to that in which water is usually held, they will be relatively slow to recognize and eat such food. But in a wild state the congeners of the domestic fowl, as grouse, pheasants, etc., do not find food or water before them in such way. Their food is distributed, however, much more like the particles we scatter before the chick than does their water supply resemble that of our methods.

A young grouse would naturally get its water from the dew on herbage, possibly from rain water that had gathered in little hollows of the ground, surface, etc. And when the birds approach a stream the surface near is moist or wet, the particles it would naturally peck at would be found up to and beyond the very margin of the water, so that the contact of the beak with water in all these cases would be inevitable and drinking would come about as naturally as eating.

When the 'writer of the note' says, 'A chick swallows water instinctively, but must be taught to drink by example or accident,' the latter term evidently having reference to the observation specially described in my letter, he plainly either misses the real point of my observation or neatly evades it. One might as well say a puppy learns to smell by accident, for in the case in question the chick did not swallow water merely, but raised its head like an old fowl and *drank* perfectly well on the very first occasion that its beak had ever been immersed in water (as a puppy sucks when its lips first come in contact with a teat, etc.); and this I take it is what happens in nature. The young grouse in the forest, or even the chick on a grass plot or in a garden, would come in contact with water without any assistance from the mother bird.

The assumption that 'the chick might die of thirst in the presence of water, as the sight of water does not call up the movements of pecking at it as do food and other small objects,' is purely gratuitous. It is not primarily so much the sight, but rather the touch of water, inevitable, as I have tried to show, in a wild state that in the very first instance leads to drinking, though the bird would also peck at shining dew drops, as my chick did at the drops on the rim of a

vessel containing water. With a fair chance and plenty of water about in a condition at all resembling that in nature, there is no such thing for a vigorous, hardy chick as death from thirst.

That habits may be hereditary in dogs I have many times observed in my own kennel during the last eight years, and, without expressing any opinion as to the origin of instincts now, I can see no impossibility in their dating back to habits.

A doctrine which asserts that eating is instinctive, but that drinking is not, is to my mind one to marvel at, and is a poor foundation for theories of evolution or heredity.

Comparative psychology will, I fear, continue to suffer till those who assume to deal with it authoritatively spend more time among animals, and less in their studies. A few observations or experiments do not give them insight into the psychic nature of animals, and it were well, I venture to think, if the qualifications of the comparative psychologist, as set forth by Dr. Groos, in the preface to his admirable work, "*Die Spiele der Thiere*," were thoroughly known and believed in by all psychologists.

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PECULIAR ABRASION OF TREE TRUNKS.

PASSING recently through a tract of rather open forest land, I could not help but notice a very peculiar appearance or color showing to a nearly uniform height on the westward side only of many trees of different species.

This shade of dull yellow extended from the surface of the snow to a height of about three to four feet, and at a little distance had much the appearance of a fungoid growth which often may be seen in nearly this color on dead or decaying trees.

At first I was completely deceived, thinking it to be a growth of this nature, and wondering why it should have attacked so many trees at the same time, I proceeded to investigate. A close examination at once revealed the truth of the matter. It was a plain case of wind-carried snow and sleet versus tree trunks, and the outer moss-grown bark had succumbed as its cut and abraded surface made plain. In places this

abrasion amounted to almost a polish, at once bringing to mind the published descriptions of the cutting, polishing and sometimes complete destruction of tree trunks in portions of the southwest by flying sand.

To clearly show the entire possibility of the abrasion in this case being due to flying snow or sleet, I would state that the woodland wherein the phenomena was noticed is very open, of scattering growth and constitutes the northwestern border of a forest of small extent, having an open exposure to the westward of upwards of a mile. Thus the prevailing westerly winds, which rage with tremendous severity at times through this open tract, are able during the winter to hurl and sift through this thin forest growth tons of snow and icy sleet. This is evidenced by the enormous snow-banks which yearly form in the forest, at a little distance from its margins, in short, at the point where the wind by meeting repeated resistance loses its carrying power. This line of deposit varies, governed by the surface contour and variable density of forest growth.

Possibly the phenomenon described has been noticed and published before, but having access to considerable literature on forestry, I have never as yet met with any account, hence this slight contribution which may be of interest to some of the readers of SCIENCE.

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THE PUMA, OR MOUNTAIN LION.

DURING last July and August I was encamped with my family up on the Strait of San Juan de Fuca, near Port Williams, Clallam county, about thirty miles west of Port Townsend. One afternoon, while my children, with their nurse, were playing upon the beach in front of our cabin, a mountain lion (*Felis concolor* Linn.) came down through a strip of woods to the low bank overlooking the beach, and gave utterance to a most frightful cry or scream. I hastened out, calling loudly, and the commotion made by myself, wife, children and nurse, frightened away the brute. Although I had a Winchester repeating rifle in the cabin, I was unable to attempt to get a shot, by reason of a severe illness with which I had been prostrated for several weeks. I

heard this wild cry repeated several times afterwards, but each time farther away in the forest.

About two years before a Mr. Travis, a rancher, living near our camp, was returning home after dark, on horseback, and was chased by a lion. The horse fled in terror along the trail through the forest, never stopping until reaching home. Mr. Travis thinks that the attack was incited by a small dog that accompanied him, rather than upon himself or his horse. He returned the next morning to the locality with several hunting dogs and succeeded in shooting the animal, which proved to be a very large specimen, measuring eight feet from tip to tip. The lions are comparatively plentiful in all wild and thinly settled portions of the State.

I have written this sketch at the suggestion of Mr. Frederick W. True, of the Smithsonian Institution, author of an interesting illustrated paper on 'The Puma or American Lion,' published under the auspices of the Institution in 1891. In this paper Mr. True refers to a conflict of authorities in regard to the cries or screams of the animal, and also in regard to its belligerency, or rather, possibly, its timidity.

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Corresponding Secretary, Tacoma Academy of Science.

TACOMA, WASHINGTON, February 13, 1896.

LOGIC AND THE RETINAL IMAGE.

WHILE admitting that *all* the physiological antecedents to the sensation of vision are entirely outside the bounds of our experience in the use of eyes, your correspondent, C. L. F. (SCIENCE, February 7, 1896, p. 201), and many others who have written to this journal on the subject during the last six months, object to my assertion that I find *one* of these phenomena inconceivable; and they treat my statement that I cannot conceive that the image on my retina is upside down, as if I had said that I could conceive of the image if it were anything else than upside down.

If for purposes of illustration I declare my conviction that the moon is not made of green cheese, what are we to think of the 'logic' which interprets this as an assertion that it is made of cheese, although this is not green? I